

Bibliographic Data :

**Title :** Automatic barring gear

**Application**

**Number :** 99222132

**Application Date :** 1999.08.30

**Publication**

**Number :** 2385150

**Publication Date :** 2000.06.28

**IPC :** F16H49/00

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**Priority**

**Information :**

**Abstract :** [ MT ] The patent refers to the field of 'gearing'. The automatic barring gear is that one kind is applied for rotating machinery line shafting levelling vertically, increase the specialized barring tool of the square driving rotor by the deceleration. Its structure includes retarding system two times, arm of couples, radial and cod, by stationary barrier big gear wheel and barring top frame oil scupper flange faying face permanent connection of apparatus, arm of couples centre hole circumferential surface and unite shaft flange, have air clearance between the exterior side, unite the axle key to pack into uniting in the shaft flange groove, connect and unite the shaft flange and arm of couples, back-lash angle stays with fillistered joint, unite shaft flange and quilt barring apparatus connection shaft rigid coupling. The advantage can replace manpower, easy to use, accurate, work efficiency is high.

## Claim

1, automatic barring gear is connected the speed reducer by the motor and is formed the deceleration system one time, and the secondary deceleration system is formed with the arm of couple to epaxial pinion of speed reducer output and gear wheel meshing, characterized in that arm of couple outer end and speed reducer link, and the arm of couple intermediate member inserts the gear wheel centre bore, and its vertical fitting surface forms radial bearing, and

horizontal fitting surface forms the cod, is linked gear wheel and upper spider oil groove flange faying face by barring equipment by the fixed bolster, has the air gap between arm of couple centre bore periphery and the shaft coupling flange lateral surface, and shaft coupling flange and arm of couple are connected in packing the recess of shaft coupling flange into to the shaft coupling key, and backlash angle and notch connection are in the same place, shaft coupling flange and by the rigid connection of barring equipment connecting axle.

2, according to the said automatic barring gear of claim 1, characterized in being used for the concentric adjusting bolt that the adjustment lies in air gap between arm of couple and the shaft coupling flange to pass the screw on the fixed bolster, push up on the upper spider oil groove flange medial surface by barring equipment.

3, according to the said automatic barring gear of claim 1, it is ring shape to the restriction retaining ring that the cluster moved to characterized in limiting the couple arm axle, keep off in the middle part of arm of couple and gear wheel under the bottom surface, by screw connection bottom surface under the arm of couple.

4, according to the said automatic barring gear of claim 1, characterized in having on the arm of couple ability to inject lubricating oil into the oil filler point of bearing between arm of couple and the gear wheel.

5, automatic barring gear is connected the speed reducer by the motor and is formed the deceleration system one time, and the secondary deceleration system is formed with the arm of couple to epaxial pinion of speed reducer output and gear wheel meshing,

characterized in that arm of couple outer end and speed reducer link the arm of couple intermediate part

Dividing and inserting the gear wheel centre bore, its vertical fitting surface forms radial bearing, and horizontal fitting surface forms the cod, is linked gear wheel and upper spider oil groove flange faying face by barring equipment by the fixed bolster, and the shaft coupling key fuses with the shaft coupling flange, inlays the groove of shaft coupling key and all establishes bottom in the middle of the arm of couple with the backlash angle, the higher authority is equipped with the air gap flange, and is set up the air gap between the barring equipment connecting axle, shaft coupling flange and by the rigid connection of barring equipment connecting axle.

6, according to the said automatic barring gear of claim 5, characterized in being used for the adjustment and lie in the air gap flange and pass the screw on the fixed bolster with concentric adjusting bolt by clearance between the barring equipment connecting axle, push up on the upper spider oil groove flange medial surface by barring equipment.

7, according to the said automatic barring gear of claim 5, it is ring shape to the restriction retaining ring that the cluster moved to characterized in limiting the couple arm axle, keeps off bottom surface under arm of couple middle part lateral surface and gear wheel middle part, by the screw connection at the arm of couple lateral surface.

8, according to the said automatic barring gear of claim 5, characterized in having on the arm of couple ability to inject lubricating oil into the oil filler point of bearing between arm of couple and the gear

wheel.

9, automatic barring gear is connected the speed reducer by the motor and is formed the deceleration system one time, characterized in speed reducer output axle head and shaft coupling key-type connection, and in recess on the shaft coupling flange is packed into to the shaft coupling key, be in the same place with the notch connection in the backlash angle, is linked speed reducer and upper spider oil groove flange faying face by barring equipment by the fixed bolster shaft coupling flange and by the rigid connection of barring equipment connecting axle.

10, according to the said automatic barring gear of claim 9, characterized in adjusting the automatic barring gear and pass fixed with concentric adjusting bolt by barring equipment connecting axle concentricity

Screw on the frame, the top is on the upper spider oil groove flange medial surface by barring equipment.

11, automatic barring gear is connected the speed reducer by the motor and is formed the deceleration system one time, and the secondary deceleration system is formed with the arm of couple to epaxial pinion of speed reducer output and gear wheel meshing, characterized in that the arm of couple outer end links through fixed bolster and speed reducer, and link through fixed bolster and upper spider oil groove flange faying face by barring equipment, the gear wheel intermediate member inserts couple Bizhong heart hole, and its vertical fitting surface forms radial bearing, and horizontal fitting surface forms the cod, and the shaft coupling key fuses with the shaft coupling

flange, and the groove of inlaying the shaft coupling key the higher authority is equipped with the air gap flange, and sets up the air gap between the gear wheel centre bore anchor ring bottom all establishing in the middle of the gear wheel with the backlash angle, shaft coupling flange and by the rigid connection of barring equipment connecting axle.

12, according to the said automatic barring gear of claim 11, characterized in being used for the concentric adjusting bolt that the adjustment lies in air gap between air gap flange and the gear wheel centre bore anchor ring to pass the screw on the fixed bolster, push up on the upper spider oil groove flange medial surface by barring equipment.

13, according to the said automatic barring gear of claim 11, it is ring shape to characterized in limiting the restriction retaining ring that gear wheel axial cluster moved, keep off in the middle part of gear wheel middle part lateral surface and arm of couple under the bottom surface, by the screw connection at the gear wheel lateral surface.

14, according to the said automatic barring gear of claim 11, there is an ability to inject lubricating oil into the oil filler point of bearing between gear wheel and the arm of couple on characterized in the gear wheel.

## The automatic barring gear

This utility model relates to one kind and is used for the vertical rotary machine shafting alignment of vertical hydroelectric generating

set and other, increases the special barring instrument that the square drove the rotor, the automatic barring gear of specifically saying so by the speed reduction.

At present, the shafting alignment barring of vertical hydroelectric generating set and other vertical rotary machines, crude manpower barring mode is still continued to use to the major part, and also useful steel wire rope crane draws or the electromagnetic force drive, all has a lot of shortcomings. Its major defect is: many with personnel, labour intensity is big, the unwieldy, the error in reading is big, and the inefficiency takes place sometimes that operating personnel dodge down that pavement, steel wire rope are broken, the earth anchor draws bad, the radial power partially of magnetism to make problems such as the sound rubs mutually, and above all sorts of circumstances can lead to the fact casualties and equipment damage accident.

This utility model purpose lies in overcoming the shortcoming in the above-mentioned technique, proposes an automatic barring gear, makes it lighten the manual labor, operates nimbly, improves barring accuracy and working efficiency.

This utility model purpose is realized by following technical scheme.

According to the concrete structure by barring equipment connecting axle, propose four kind following technical schemes:

First kind of scheme is: this automatic barring gear, connects the speed reducer by the motor and forms the deceleration system one time, and the epaxial pinion of speed reducer output meshes with the gear wheel, forms the secondary deceleration system with the arm of

couple, characterized in that arm of couple outer end and speed reducer link, and the arm of couple intermediate member inserts the gear wheel centre bore, and its vertical fitting surface forms the radial bearing, and horizontal fitting surface forms the cod, by the fixed bolster with gear wheel and the upper spider by barring equipment

Oil groove flange faying face links, has the air gap between arm of couple centre bore periphery and the shaft coupling flange lateral surface, and shaft coupling flange and arm of couple are connected in packing the recess of shaft coupling flange into to the shaft coupling key, is in the same place with the notch connection in the backlash angle, the shaft coupling flange with by the rigid connection of barring equipment connecting axle,

It passes the screw on the fixed bolster to be used for the concentric adjusting bolt that the adjustment lies in air gap between arm of couple and the shaft coupling flange, pushes up on the upper spider oil groove flange medial surface by barring equipment. Restriction couple arm axle is a ring shape to the restriction retaining ring that the cluster moved, keep off in the middle part of arm of couple and gear wheel under the bottom surface, by screw connection bottom surface under the arm of couple. There is an ability to inject lubricating oil into the oil filler point of bearing between arm of couple and the gear wheel on the arm of couple. And utilize the axle head tang to guarantee sufficient concentricity.

The theory of operation is: after to the motor power transmission, drives speed reducer and pinion and rotates, and its tangential force produces the counterforce through the gear wheel of fixing, and it

increases the square to continue to slow down, makes the arm of couple wind the bull gear drive under the restraint of cod and radial bearing, and the output torque. Its torque is through inlaying the shaft coupling key on the arm of couple top, transmits for by barring equipment connecting axle through the shaft coupling flange. By concentric adjusting bolt adjustment concentricity, guarantee that the air gap is even. When rotatory to predetermined angle by barring equipment connecting axle, handle a little upside down in the same direction as the switch by falling, make the shaft coupling key in the backlash angle with the separation of shaft coupling flange, can get rid of the external interference, make to be in the free state by barring equipment connecting axle, in order to obtain objective precise information.

Second kind scheme is: this automatic barring gear, connects the speed reducer by the motor and forms the deceleration system one time, and the secondary deceleration system is formed with the arm of couple to epaxial pinion of speed reducer output and gear wheel meshing, characterized in that arm of couple outer end and speed reducer link the couple

The arm intermediate member inserts the gear wheel centre bore, and its vertical fitting surface forms radial bearing, and horizontal fitting surface forms the cod, is linked gear wheel and upper spider oil groove flange faying face by barring equipment by the fixed bolster, and the shaft coupling key fuses with the shaft coupling flange, inlays the groove of shaft coupling key and all establishes bottom in the middle of the arm of couple with the backlash angle, the higher authority is equipped with



the air gap flange, and is set up the air gap between the barring equipment connecting axle, shaft coupling flange and by the rigid connection of barring equipment connecting axle.

It lies in the air gap flange and passes the screw on the fixed bolster with concentric adjusting bolt by clearance between the barring equipment connecting axle to be used for the adjustment, pushes up on the upper spider oil groove flange medial surface by barring equipment. Restriction couple arm axle is a ring shape to the restriction retaining ring that the cluster moved, keeps off bottom surface under arm of couple middle part lateral surface and gear wheel middle part, by the screw connection at the arm of couple lateral surface. There is an ability to inject lubricating oil into the oil filler point of bearing between arm of couple and the gear wheel on the arm of couple. And utilize the axle head tang to guarantee sufficient concentricity.

The tertium genus technical scheme is: this automatic barring gear, connects the speed reducer by the motor and forms the deceleration system one time, characterized in speed reducer output axle head and shaft coupling key-type connection, and in recess on the shaft coupling flange is packed into to the shaft coupling key, be in the same place with the notch connection in the backlash angle, is connected speed reducer and the upper spider oil groove flange faying face circle by barring equipment calmly shaft coupling flange and by the rigid connection of barring equipment connecting axle by the fixed bolster.

Shaft coupling flange and link construction by barring equipment connecting axle are with the butt embedding of bottom surface under

the shaft coupling flange by the groove part of barring equipment connecting axle top surface. Can utilize by the process technology hole of barring equipment connecting axle or its external diameter restraint concentricity. The adjustment automatic barring gear passes the spiral shell on the fixed bolster with concentric adjusting bolt by barring equipment connecting axle concentricity

The hole, the top is on the upper spider flange medial surface by barring equipment.

The tertium genus technical scheme is applicable to by the portable circumstances of barring weight of equipment. Adopt individual speed reducer drive, only the secondary deceleration system is saved to deceleration system once.

Fourth kind technical scheme is: this automatic barring gear, connects the speed reducer by the motor and forms the deceleration system one time, and the secondary deceleration system is formed with the arm of couple to epaxial pinion of speed reducer output and gear wheel meshing, characterized in that the arm of couple outer end links through fixed bolster and speed reducer, and link through fixed bolster and upper spider oil groove flange faying face by barring equipment, the gear wheel intermediate member inserts couple Bizhong heart hole, and its vertical fitting surface forms radial bearing, and horizontal fitting surface forms the cod, and the shaft coupling key fuses with the shaft coupling flange, and the groove of inlaying the shaft coupling key the higher authority is equipped with the air gap flange, and sets up the air gap between the gear wheel centre bore medial surface bottom all establishing in the middle of the gear wheel with the backlash angle,

shaft coupling flange and by the rigid connection of barring equipment connecting axle.

It passes the screw on the fixed bolster to be used for the concentric adjusting bolt that the adjustment lies in air gap between air flange and the gear wheel centre bore anchor ring, pushes up on the upper spider oil groove flange medial surface by barring equipment. The restriction retaining ring that restriction gear wheel axial cluster moved is a ring shape, keeps off bottom surface under gear wheel middle part lateral surface and arm of couple middle part, by the screw connection at the gear wheel lateral surface. There is an ability to inject lubricating oil into the oil filler point of bearing between gear wheel and the arm of couple on the gear wheel. And utilize the axle head tang to guarantee sufficient concentricity.

This utility model advantage is that the structure is simple, equitable, ingenious, and the torque is big, can replace the manpower barring totally, reduces labour intensity, liberates the productive forces, and the rest point is accurate, has nothing to do with and winds, and the reading is accurate, operate nimble, easy control, the work efficiency height is applicable to the not vertical rotation of equidimension

The plant equipment.

Combine four embodiments of description drawings:

Fig. 1 is a first kind of automatic barring gear cross sectional view,

Fig. 2 is its A to the view,

Fig. 3 is a second kind automatic barring gear cross sectional view,

Fig. 4 is its B to the view,

Fig. 5 is a tertium genus automatic barring gear cross sectional view,

Fig. 6 is the 1-1 sectional view,

Fig. 7 is a fourth kind automatic barring gear cross sectional view,

The embodiment of first kind of technical scheme is expressed to Fig. 1, Fig. 2, and this automatic barring gear is connected speed reducer 2 by motor 1 and is formed the deceleration system one time, and the secondary deceleration systems are formed with arm of couple 4 to 2 output epaxial pinions 3 of speed reducer and 5 meshings of gear wheel, and 4 outer ends of arm of couple link with speed reducer 2, and 4 intermediate members of arm of couple insert 5 centre bores of gear wheel, and its vertical fitting surface forms radial bearing 9, and horizontal fitting surface forms cod 8, is linked gear wheel 5 and 13 faying faces of upper spider oil groove flange by barring equipment by fixed bolster 12, has air gap 11 between 4 centre bore peripheries of arm of couple and 7 lateral surfaces of shaft coupling flange, and shaft coupling flange 7 and arm of couple 4 are connected in packing the recess of shaft coupling flange 7 into to shaft coupling key 6, and backlash angle  $\alpha$  and notch connection are in the same place, shaft coupling flange 7 and by 10 rigid connections of barring equipment connecting axle. Be used for the adjustment lie in arm of couple 4 and shaft coupling flange between 7 the concentric adjusting bolt 16 of air gap 11 pass the screw on the fixed bolster 12, push up on the medial surface of the upper spider oil groove flange 13 by barring equipment. The restriction retaining ring 14 that 4 axial clusters on the restriction couple arm moved

Ring shape, keep off bottom surface under arm of couple 4 and 5 middle parts of gear wheel, by the screw connection in 4 times bottom surfaces of arm of couple. There is an ability to inject lubricating oil into the oil filler point 15 of bearing between arm of couple and the gear wheel on arm of couple 4. Can inject lubricating oil into, reduce wearing and tearing.

Fig. 3, Fig. 4 are the embodiments of second kind technical scheme, and this kind of automatic barring gear is connected speed reducer 2 by motor 1 equally and is formed the deceleration system one time, and the secondary deceleration systems are formed with arm of couple 4 to speed reducer output epaxial pinion 3 and 5 meshings of gear wheel, and 4 outer ends of arm of couple link with speed reducer 2, and 4 intermediate members of arm of couple insert 5 centre bores of gear wheel, and its vertical fitting surface forms radial bearing 9, and horizontal fitting surface forms cod 8, are linked gear wheel 5 faying face with upper spider oil groove flange 13 by barring equipment by fixed bolster 12, and shaft coupling key 6 fuses with shaft coupling flange 7, and the groove and the backlash angle  $\alpha$  that inlay shaft coupling key 6 the higher authority are equipped with air gap flange 17 bottom all establishing in the middle of arm of couple 4, and are set up air gap 11 between 10 by barring equipment connecting axle, shaft coupling flange 7 and by 10 rigid connections of barring equipment connecting axle. Be used for the adjustment lie in air gap flange 17 with by barring equipment connecting axle between 10 the concentric adjusting bolt 16 of air gap 11 pass the screw on the fixed bolster 12, push up on the medial surface of the upper spider oil groove flange 13 by barring equipment. The restriction retaining ring 14 that 4 axial

clusters on the restriction couple arm moved is ring shapes, keeps off below arm of couple middle part lateral surface and gear wheel. Can reduce wearing and tearing to bearing 8,9 interior oilings through oil filler point 15.

Fig. 5, Fig. 6 are the embodiments of tertium genus technical scheme, and this kind of automatic barring gear is connected speed reducer 2 by motor 1 and is formed the deceleration system one time, and 2 output axle heads of speed reducer are connected with shaft coupling key 6, and shaft coupling key 6 is packed into in the recess on the shaft coupling flange 7, backlash angle  $\alpha$  and concave

The groove links together, shaft coupling flange 7 with by 10 rigid connections of barring equipment connecting axle. Shaft coupling flange 7 and link construction by barring equipment connecting axle 10 are with the butt embedding of shaft coupling flange 7 times bottom surfaces by the groove part of 10 top surfaces of barring equipment connecting axle. Link speed reducer 2 and 13 faying faces of upper spider oil groove flange by barring equipment by fixed bolster 12.

Fig. 7 is a fourth kind technical scheme embodiment, and this kind of automatic barring gear is connected speed reducer 2 by motor 1 and is formed the deceleration system one time, and epaxial pinion 3 and 5 meshings of gear wheel are exported to the speed reducer, form the secondary deceleration systems with arm of couple 4, and 4 outer ends of arm of couple link through fixed bolster 12 and speed reducer 2, and link through fixed bolster 12 and 13 faying faces of upper spider oil groove flange by barring equipment. 5 intermediate members of gear wheel insert 4 centre bores on the couple arm, and its vertical fitting

surface forms radial bearing 9, and horizontal fitting surface forms cod 8, and shaft coupling key 6 fuses with shaft coupling flange 7, inlay the groove of shaft coupling key 6 and all establish bottom in the middle of gear wheel 5 with backlash angle  $\alpha$ , the higher authority are equipped with air gap flange 17, and set up air gap 11 between the 5 centre bore anchor rings of gear wheel, shaft coupling flange 7 and by 10 rigid connections of barring equipment connecting axle. The concentric adjusting bolt 16 that is used for adjusting air gap 11 passes the screw on the fixed bolster 12, and the top is on 13 medial surfaces of upper spider oil groove flange by barring equipment. The restriction retaining ring 14 that 5 axial clusters of restriction gear wheel moved is ring shapes, keeps off bottom surface under 5 middle part lateral surfaces of gear wheel and 4 middle parts of arm of couple, by the screw connection at the gear wheel lateral surface. There is oil filler point 15 on the gear wheel, can injects lubricating oil into, reduce wearing and tearing.